

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN FRANCISCO BAY REGION

ORDER NO. R2-2003-0048

ISSUANCE OF WASTE DISCHARGE REQUIREMENTS AND WATER QUALITY
CERTIFICATION FOR:

THE PORT OF OAKLAND
MAINTENANCE DREDGING PROGRAM, 2003 THROUGH 2008

The California Regional Water Quality Control Board, San Francisco Bay Region (herein called "the Regional Board"), **finds that:**

1. These Waste Discharge Requirements and Water Quality Certification apply to the Port of Oakland (hereinafter "the Port") for maintenance dredging of 32 berths and eight marinas, grading of underground shoals (knock-down dredging), and advance maintenance dredging, at the Port of Oakland, and for disposal and beneficial reuse of dredged material created by these activities, over a period of approximately five years, from the effective date of this Order until May 31, 2008. The Port anticipates dredging and disposal of approximately 633,500 cubic yards of material during this period.
2. The Port has applied for a U.S. Army Corps of Engineers individual permit (File No. 27629S) pursuant to Section 404 of the Clean Water Act (33 U.S. Code 1344). The Port has applied to the Regional Board for a Clean Water Act Section 401 (33 U.S. Code 1341) water quality certification that the project will not violate State water quality standards.

Location and Scope

3. The Port is located in Central San Francisco Bay within the City of Oakland, occupying 19 miles of shoreline. The Port area includes Oakland Inner, Middle, and Outer Harbors (see Figure 1, Regional Map).
4. The Port's marine terminals comprise approximately 500 acres of land and subtidal areas in Oakland Outer and Inner Harbors, generally located between Jack London Square and the Emeryville Crescent. The Port operates 32 deep water berths and eight recreational marinas (see Figures 2 through 8).
5. The U.S. Army Corps of Engineers is responsible for maintaining the federal navigation channels leading to and through the Port's berthing areas and marinas. Dredging of the federal channels is regulated under a separate Order from this Regional Board.
6. In 1999, deepening of Berths 55-58 was authorized by Regional Board Order No. 99-055. The deepening was completed in 2002. Deepening of the federal navigation channels in the Port area to -50 feet Mean Lower Low Water (MLLW) was authorized by Regional Board order No. 00-110 in 2000. This work is ongoing. The Port anticipates deepening many of its Berths to -50 feet in the near future. This activity would be regulated by a separate action by this Regional Board.

Maintenance Dredging, Knock-Down Dredging, and Advance Maintenance Dredging

7. Maintenance dredging of the berths and marinas will be performed using clamshell, hydraulic, or trailing suction hopper dredges.
8. Currently authorized project depths and estimated dredging volumes for berths and marinas at the Port are listed below:
9. The Port plans to utilize non-routine knock-down dredging, or grading of underwater shoals, to supplement routine maintenance dredging episodes. Knock-down dredging is the redistribution of shoaled sediments within a project area, as opposed to regular maintenance dredging, in which shoaled sediments are removed completely. Knock-down dredging is performed by dragging an I-beam towed by a boat across a shoal in order to redistribute the shoaled material within the project area, or by excavating shoaled material with a small clamshell bucket and releasing the material near the bottom elsewhere within the project area. The equipment for performing knock-down dredging can be mobilized more quickly and less expensively than normal dredging equipment. Knock-down dredging will be most useful in supplementing routine maintenance dredging when time constraints may not allow for normal dredging, or when a shoal threatening navigation covers a small area of a project area that is otherwise at or below its permitted depth.
10. "Advance maintenance dredging" refers to the practice of dredging a project area deeper than the required operational depth, in order to reduce the frequency of necessary maintenance dredging. The Port will undertake a pilot advance maintenance dredging program at Berths 25, 26, and 30 during the first three years of activities authorized under this Order. For the pilot program, a trench will be excavated lengthwise in each berth, running parallel to the wharf face. The trenches will be approximately three feet deep, and approximately half the width of the berth (see Figures 9 - 11, Advance Maintenance Trenches). Creation of the advance maintenance trenches would result in excavation and disposal of approximately 16,500 cubic yards of dredged material. The trenches will have the capacity to capture sediment accumulation in the berths, thereby reducing the required frequency of dredging needed to maintain adequate depths at the berths. After three years, if the advance maintenance trenches have been successful in increasing efficiency of dredging, the Port will request authorization to employ this strategy at other berths.

Table 1. Dredging locations, project depths, and estimated dredging volumes

Location	Project Depth ¹ (feet MLLW)	Overdredge Allowance (feet)	Estimated 5-Year Dredging Volume (cubic yards)
<u>Berths</u>			
Berths 7-9	-37	2	15,300
Berth 10	-36	2	11,600
Berths 20-22	-42	2	25,400
Berths 23-26	-44	2	90,200
Berth 30	-44	2	43,200
Berths 32-33	-42 ²	2	48,900
Berth 34	-38	2	14,800
Berth 35	-42	2	30,400
Berths 37-38	-42	2	30,900
Berths 55-59	-50	2	87,900
Berths 60-63	-42	2	34,100
Berths 67-68	-42	2	14,900
Berths 82-84	-35	2	13,100
<i>Total for all berths</i>			<i>460,700</i>
<u>Marinas</u>			
Jack London Square (West)	-12	1	-
Foot of Broadway	-15	1	-
Jack London Square (Central)	-12	1	-
Jack London Square (East)	-12	1	-
Sea Breeze	-12	1	-
Embarcadero Cove (North)	-12	1	-
Embarcadero Cove (Central)	-12	1	-
Union Point Basin	-12	1	-
<i>Total for all marinas</i>			<i>60,000</i>
<i>Advance Maintenance Dredging</i>			<i>16,500</i>
<i>Contingency Allowance (approx 20%)</i>			<i>96,000</i>
<i>Total Five-Year Dredging Volume</i>			<i>633,500</i>

¹ These depths do not include overdredge allowance.

² Berths 32 and 33 are currently maintained to -38 feet MLLW, but will be deepened to -42 feet in 2003.

Disposal of Dredged Material

11. The Port will dispose of dredged material at a variety of locations. The exact location for disposal of material from each individual dredging episode will be determined as part of the episode approval process, and will depend on several factors including cost, quantity of dredged material, physical, chemical, and biological characteristics of dredged material, and the availability of various disposal locations.

12. The general disposal options for the Port's dredged material include:
 - the Alcatraz Dredged Material Disposal Site (SF-11) in San Francisco Bay,
 - the Deep Ocean Disposal Site (SF-DODS), 50 miles offshore of San Francisco,
 - tidal and subtidal wetland creation,
 - construction fill for grading or to create new land,
 - levee maintenance, and
 - upland disposal.
13. The Port uses its Berth 10 Rehandling Facility (Regulated by Regional Board Order No. 98-019) to dry and rehandle dredged material that has been determined to be not suitable for unconfined aquatic disposal, based on its physical, chemical, or biological characteristics. Material dried at Berth 10 is eventually disposed of at upland locations, either at landfills or is used as construction fill at approved locations. The Port anticipates using the Berth 10 facility for up to 10,000 cy per year of maintenance dredged material.

Approval of Dredging and Dredged Material Disposal Episodes

14. This Order requires that individual episodes of maintenance, knock-down, and advance maintenance dredging and dredged material disposal be approved by the Executive Officer prior to episode initiation (Provision B-9). Episode approval will be coordinated through the multi-agency Dredged Material Management Office, of which the Regional Board is a member.

Project Changes

15. Because of variability in natural processes governing sedimentation, there may be changes in the locations and volumes proposed in Table 1. This Order requires that the Port notify the Executive Officer in writing of significant project changes (Provision B-2). Increased volumes or addition of new projects may necessitate Board actions.

Long Term Management Strategy for Disposal of Dredged Material

16. The Regional Board is a participant in the Long Term Management Strategy (LTMS) for the Placement of Dredged Material in the San Francisco Bay Region along with the U.S. Army Corps of Engineers, the U.S. EPA, the San Francisco Bay Conservation and Development Commission and the State Water Resources Control Board. These LTMS agencies evaluated alternative management options for disposal and reuse of dredged sediment over a fifty-year planning horizon in a Policy Environmental Impact Statement/Environmental Impact Report (EIS/EIR) that was completed in October 1998. The EIS/EIR indicated that dredged material disposal may have adverse impacts on the beneficial uses of the waters of San Francisco Bay and that disposal of dredged material at designated sites in San Francisco Bay should be reduced from historical levels.
17. The LTMS agencies have determined that the preferred alternative is to reduce disposal in the Bay to a long-term average of 1.25 million cubic yards per year. This goal can be accomplished by disposing of more dredged material at SF-DODS and beneficially reusing dredged material. The Regional Board finds that it is in the public interest to encourage ocean disposal and beneficial reuse of suitable dredged materials to reduce the volume of disposal in San Francisco Bay.

18. Implementation of the LTMS long-term goal will occur in a phased program, as described in the LTMS Management Plan, adopted by the Regional Board on June 19, 2001. Initial efforts to reduce in-Bay disposal of dredged material will be voluntary on the part of all Bay-area dredging project proponents. Bay-area dredgers will be assigned annual allocations of in-Bay disposal volumes that will decrease every three years until the long-term goal is reached in 2012. During the voluntary phase of LTMS implementation, allocations will serve as targets. If voluntary efforts do not produce progress to the goal of reduced in-Bay disposal, the goal will be achieved through a mandatory (regulatory) approach where dredging project proponents will not be authorized to dispose of amounts of dredged material in San Francisco Bay in excess of their allocated volumes.
19. The framework in described in this Order for determining dredged material disposal locations for individual dredging episodes is consistent with the voluntary phase of the LTMS Management Plan.

Impacts of Dredging and in-Bay Disposal

20. The activities authorized by this Order will not alter the existing pattern of number and types of ships calling at the Port, and thus will not result increases of ballast water discharges into San Francisco Bay. The Port has an active ballast water exchange program. Therefore, no special provisions related to ballast water exchange and invasive species are included in this Order.
21. Bay-wide impacts of dredging and dredged material disposal activities have not been well quantified. In order to minimize potential impacts of these activities on threatened and endangered species, the California Department of Fish and Game, the National Marine Fisheries Service, and the U.S. Fish and Wildlife Service issued Biological Opinions on the LTMS EIS/EIR. The Opinions set work windows, during which projects are authorized for incidental take under the Endangered Species Act. Dredging or disposal of dredged material proposed for times outside of work windows may be approved through a consultation process with the resource agencies. This Order requires that the Port comply with the work windows (contained in Tables F-1 and F-2 of Appendix F of the LTMS Management Plan) or obtain written authorization from the resource agencies for work proposed outside of these windows (Provisions B-6 and B-7).
22. Although several studies have been conducted on the impacts of dredged material disposal, formal management of the in-Bay disposal sites needs to be improved. Additional information is needed to assess the cumulative and long-term effects of dredging and dredged material disposal. Particular areas of focus should be: 1) fate of dredged material disposed at the currently authorized disposal sites, 2) evaluation of an appropriate initial mixing zone for dredged material disposal, 3) status of residual dredged material at the disposal sites (physical properties, size and extent of the Alcatraz mound, etc.), and 4) how the dredging and disposal process affects the bioavailability of chemicals that currently impair the beneficial uses of San Francisco Bay. The Regional Board recognizes the need for more information about these concerns and therefore endorses a study-based approach to monitor the effects of dredging and dredged material disposal. In the absence of such information, the reduction of in-Bay disposal as described in the LTMS Management Plan is necessary to protect water quality in San Francisco Bay.

23. Pursuant to California Water Code Section 13267, this Order requires the Port to provide technical information on the water quality impacts of discharges of dredged material into San Francisco Bay (Provision B-11). The San Francisco Estuary Regional Monitoring Program for Trace Substances (RMP) is a coordinated and comprehensive long-term monitoring program with the goal of monitoring water and sediment quality to determine compliance with relevant numerical objectives and studying bioaccumulation at an array of Bay locations. The program is administered by the San Francisco Estuary Institute, located in Oakland, California, with oversight by the Regional Board. In previous years, the Port (along with many other Bay Area dischargers) has elected to provide the information Provision B-11 by contributing money annually to the RMP, based on annual volumes of in-Bay dredged material disposal. The Board hereby encourages the Port to continue to provide the required information in this manner.

Other

24. The project is categorically exempt from the requirements of the California Environmental Quality Act pursuant to Title 14 of the California Code of Regulations, Section 15304(g). The Regional Board has filed a Notice of Exemption for the project with the State Clearinghouse.
25. The Regional Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on June 21, 1995. This plan was approved by the State Water Resources Control Board and the Office of Administrative Law on July 20 and November 13, 1995, respectively. A summary of regulatory provisions is contained in Title 23 of the California Code of Regulations, section 3912. The Basin Plan defines beneficial uses and water quality objectives for waters of the State, including surface waters and groundwaters.
26. The beneficial uses of San Francisco Bay in the vicinity of the dredging and disposal areas are:
- a. Fish migration and spawning
 - b. Estuarine habitat
 - c. Wildlife habitat
 - d. Preservation of rare and endangered species
 - e. Water contact and non-contact water recreation
 - f. Shellfish harvesting
 - g. Commercial and sport fishing
 - h. Navigation
 - i. Industrial process and service supply
27. The Port and interested persons have been notified of the Regional Board's intent to issue requirements for the Port and have been provided with the opportunity to submit their written comments.
28. Any violation of provisions of this Order is subject to administrative civil enforcement pursuant to the California Water Code. Failure to meet any condition of this Order may subject the Port to civil penalty imposed by the Regional Board to a maximum of \$1000 per day of violation or \$10 for each gallon of waste discharged in violation of this Order.

29. The Regional Board, in a properly noticed public hearing on May 21, 2003 heard and considered all comments pertaining to the project.
30. This Order certifies that with the incorporation of the following provision, any discharge from the project will comply with the applicable provisions of sections 301 ("Effluent Limitations"), 302 ("Water Quality Related Effluent Limitations"), 303 ("Water Quality Standards and Implementation Plans"), 306 ("National Standards of Performance"), and 307 ("Toxic and Pretreatment Effluent Standards") of the Clean Water Act.

IT IS HEREBY ORDERED, pursuant to the provisions of Division 7 of the California Water Code and regulations adopted thereunder and to the provisions of the Federal Water Pollution Control Act, as amended, and regulations and guidelines adopted thereunder, that the USACE shall comply with the following:

A. RECEIVING WATER LIMITATIONS

1. The dredging and disposal activities shall not create a nuisance as defined in Section 13050(m) of the California Water Code.
2. The discharge of waste shall not cause the following conditions to exist in waters of the State that cause a nuisance or adversely affect beneficial uses at any place:
 - a. Floating, suspended, or deposited macroscopic particulate matter or foam;
 - b. Aquatic growths;
 - c. Significant alteration of temperature, turbidity, or apparent color beyond present natural background levels;
 - d. Visible, floating, suspended, or deposited oil or other products of petroleum origin;
 - e. Toxic or other deleterious substances to be present in concentrations or quantities which will cause deleterious effects on aquatic biota, wildlife, or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentration.

3. The discharge of waste shall not cause the following limits to be exceeded in waters of the State in any place within one foot of the water surface:
- a. Dissolved Oxygen 5.0 mg/l minimum.
When natural factors cause lesser concentrations, then this discharge shall not cause further reduction in the concentration of dissolved oxygen.
 - b. Dissolved sulfide Variation from natural ambient pH by more than 0.5 pH units.
 - c. pH Variation from natural ambient pH by more than 0.5 pH units.
 - d. Un-ionized ammonia 0.025 mg/l as N Annual Median
0.16 mg/l as N Maximum
 - e. Toxic or other deleterious substances None shall be present in concentrations or quantities which may cause deleterious effects on aquatic biota, wildlife, or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentrations.
4. The discharge shall not cause a violation of any applicable water quality objectives for receiving waters adopted by the Regional Board and the State Water Resources Control Board as required by the Clean Water Act and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Clean Water Act, or amendments thereto, the Regional Board will revise and modify this Order in accordance with such more stringent standards.

B. PROVISIONS

Project and Project Changes

1. This Order authorizes maintenance dredging, knock-down dredging, and advance maintenance dredging of up to 633,500 cy of dredged material as described in Table 1, and disposal of up to 633,500 cy at the Alcatraz Island Disposal Site in San Francisco Bay, subject to written authorization by the Executive Officer on an episode-by episode basis. Disposal of dredged material may also occur at the Deep Ocean Disposal Site, beyond the jurisdiction of the Regional Board. Disposal of dredged material may also occur at beneficial reuse locations within the Regional Board's jurisdiction, and is subject to Executive Officer approval.
2. The Port shall inform the Executive Officer in writing of any significant changes to the project plan in Table 1 of this Order. Significant changes include the total 5-year dredging volume exceeding 633,500 cy, the total dredging volume for any year exceeding 124,000 cy (approximately one-fifth of the total 5-year dredging volume), addition of new dredging areas, and deepening of dredging areas beyond the depths specified in Table 1. The Executive Officer shall determine if such a proposed change requires modification of the Waste Discharge Requirements and Water Quality Certification issued herein, in

which case the Port shall submit a request for revised Waste Discharge Requirements and Water Quality Certification for action by the Board. Proposed changes that would require modification to this Order include but are not limited to any changes that may result in an overall increase in the amount of in-Bay disposal or an increased threat to water quality. The Executive Officer may approve minor project changes that do not require modification to this Order and which will not result in an increased threat to water quality.

Dredging and Disposal Operations

3. Dredging at each project location shall be limited to the project depths and over-dredge allowances shown in Table 1.
4. No overflow shall be discharged from any barge, with the exception of spillage incidental to clamshell dredge operations.
5. Return water overflow from hopper-type suction dredges shall be limited to no longer than 15 minutes at the dredge site during any one excavation action (pass).
6. Dredging and disposal activities shall be limited to the work windows set out by the California Department of Fish and Game, the National Marine Fisheries Service, and the U.S. Fish and Wildlife Service in their Biological Opinions on the LTMS, unless written authorization by the appropriate agencies to work outside these windows is provided to the Executive Officer.
7. Dredging shall not occur during the Pacific herring spawning season (December 1 through March 1) in spawning areas (Figure 12) unless otherwise authorized in writing by the California Department of Fish and Game.
8. Discharges of dredged material shall comply with the following annual and monthly volume target limits for disposal at the Alcatraz Island Disposal Site:

Annual:	4.0 million cubic yards	
Monthly:	October – April	0.4 million cubic yards
	May – September	0.3 million cubic yards

Episode Approval

9. Individual maintenance dredging, knock-down dredging, advance maintenance dredging, and disposal episodes shall not commence until authorized in writing by the Executive Officer, following review by the DMMO. Project descriptions, requests for dredged material suitability determinations, and evaluations of disposal alternatives (see Provision B-10, below) shall be reviewed by the DMMO. The Port shall follow applicable federal and state guidance on a tiered testing framework and on the preparation of reports.

10. For each dredging episode where disposal of dredged material in waters of the U.S. is proposed, the Port shall, as part of the episode approval process, submit to the DMMO an evaluation of alternative disposal sites pursuant to Section 404(b)(1) of the Clean Water Act. Evaluations shall include analyses of the feasibility of at least the following disposal options, and any others that are potentially available at the time of the analysis:
 - Open ocean disposal at SF-DODS,
 - Tidal and sub-tidal habitat creation or restoration,
 - Construction fill for grading or to create new land,
 - Levee maintenance, and
 - Upland disposal

Technical and Annual Reports

11. The Port shall provide technical reports regarding the impacts of dredged material disposal on waters of the State, pursuant to Section 13267 of the California Water Code.
12. No later than January 31st of each year, the Port shall provide an annual report summarizing the locations, quantities (calculated from pre- and post-dredge surveys), and ultimate disposal sites for all dredging during the previous year.

Standard Provisions

13. The discharge of dredged materials to the waters of the State shall cease immediately whenever violations of this Order are detected by the Port or by Board staff as determined by the Executive Officer, and the discharge shall not resume until compliance can be assured to the Executive Officer's satisfaction.
14. The Port or its representative shall notify Regional Board staff immediately by telephone whenever an adverse condition occurs as a result of this activity. An adverse condition includes, but is not limited to, a violation or threatened violation of conditions of this certification, or a significant spill of petroleum products or toxic chemicals. Pursuant to Section 13267(b) of the California Water Code, a written notification of adverse condition shall be submitted to the Regional Board within 30 days of occurrence. The written notification shall identify the adverse condition, describe the action necessary to remedy the condition, and specify a timetable, subject to the modifications of the Regional Board, for remedial actions.
15. The Port shall permit the Regional Board or its authorized representative in accordance with California Water Code Section 13267(c) as follows:
 - a. Entry upon premises in which any required records are kept.
 - b. Access to copy any records required to be kept under terms and conditions of this order.
 - c. Inspection of monitoring equipment or records.
 - d. Sampling of any discharge.
 - e. Provide small craft transport to off-shore locations or vessels for the purpose of inspection, provided that it is within normal business hours.

16. This certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Section 13330 of the CWC and Section 3867 of Title 23 of the California Code of Regulations (23 CCR).
17. This certification action is not intended and shall not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to 23 CCR Subsection 3855(b) and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.
18. Certification is conditioned upon total payment of the full fee required in State regulations (23 CCR Section 3833) and owed by the applicant. The Regional Board received the full application fee of \$20,000 on January 30, 2003.
19. This Order supersedes Resolution No. 98-020.
20. This Order will expire on May 31, 2008.

I, Loretta K. Barsamian, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on May 21, 2003.


LORETTA K. BARSAMIAN
EXECUTIVE OFFICER

FIGURES

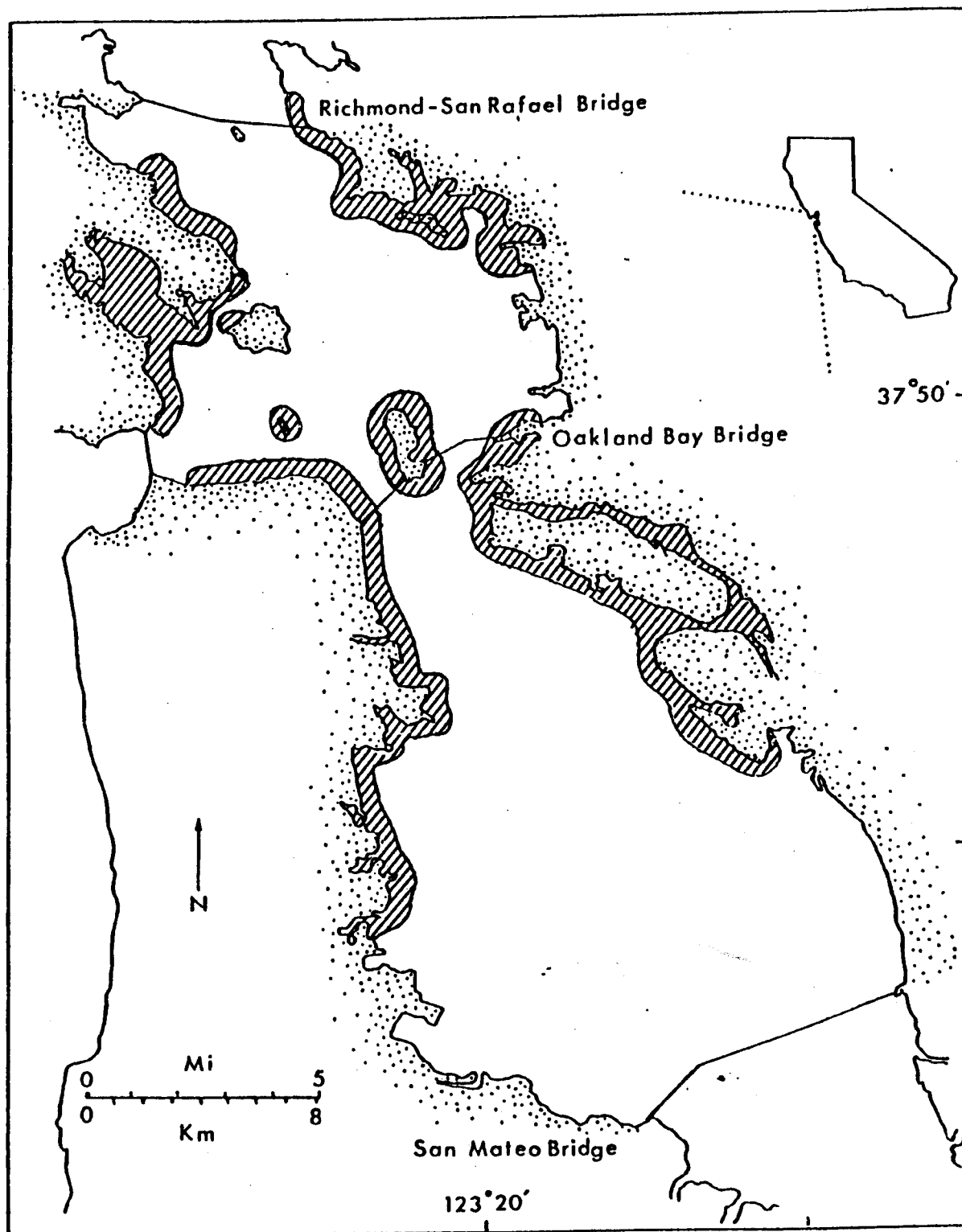
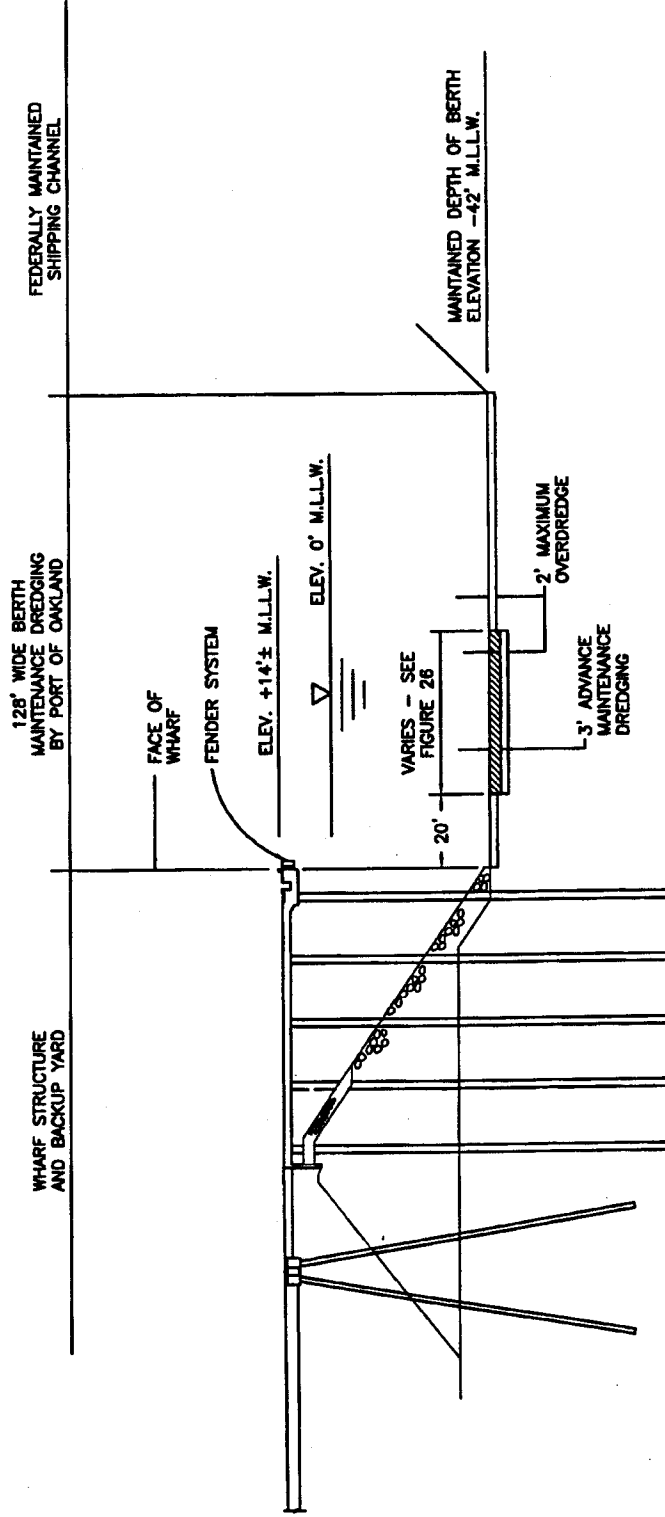
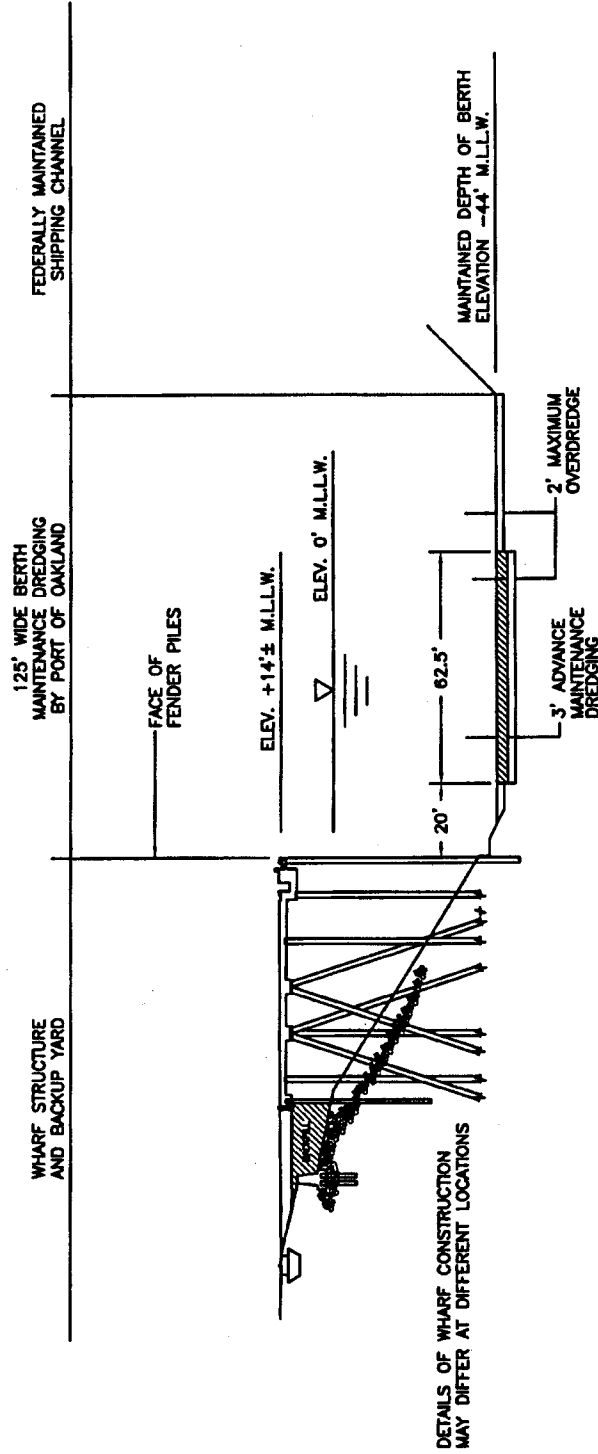


Figure 12 – Pacific Herring Spawning Areas



TYPICAL CROSS SECTION AT BERTH 30 ADVANCE MAINTENANCE DREDGING

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	<div data-bbox="1404 609 1448 1274" data-label="Text"> <p>FIGURE 11 - CROSS SECTION</p> </div>	<div data-bbox="1391 121 1445 535" data-label="Text"> <p>DRAWING PREPARED BY W.H. BIRKINSHAW DATE: 1/21/03 SCALE: 1"=50'</p> </div>



TYPICAL CROSS SECTION AT BERTHS 25/26 ADVANCE MAINTENANCE DREDGING

<p>PORT OF OAKLAND</p> <p>530 WATER ST. OAKLAND, CALIFORNIA</p>	<p>CONSOLIDATED DREDGING--DREDGED MATERIAL REUSE/DISPOSAL APPLICATION</p>	<p>ALL PROPOSED WORK IS WITHIN THE CITY OF OAKLAND AND THE COUNTY OF ALAMEDA</p>
<p>FIGURE 10 - CROSS SECTION</p>	<p>DRAWING PREPARED BY W.H. BIRKINSHAW DATE: 1/21/03 SCALE: 1"=50'</p>	

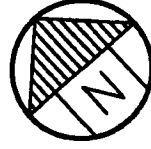
ADVANCE MAINTENANCE DREDGING BERTHS 25/26 AND 30

LEGEND:

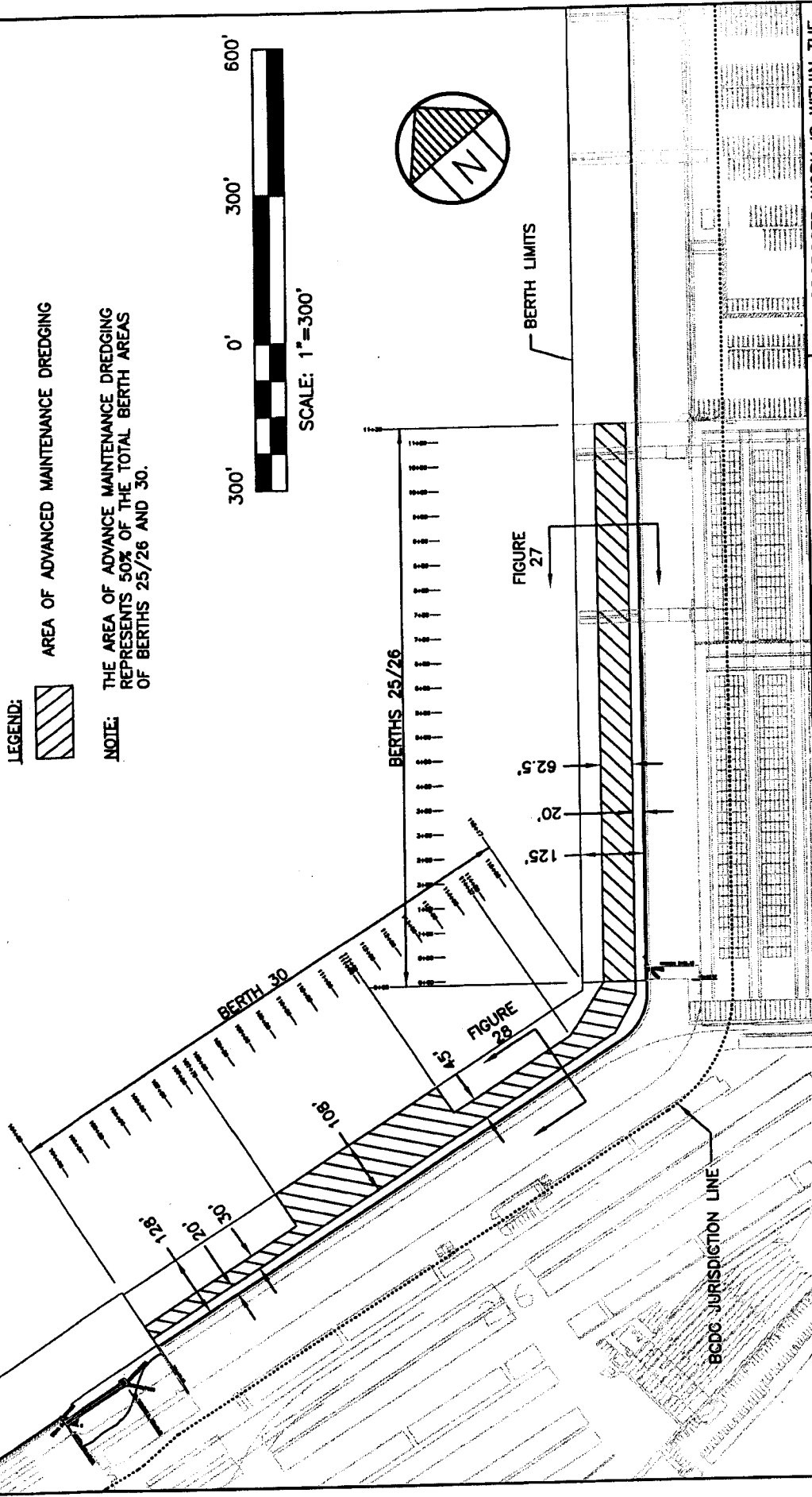


AREA OF ADVANCED MAINTENANCE DREDGING

NOTE: THE AREA OF ADVANCE MAINTENANCE DREDGING REPRESENTS 50% OF THE TOTAL BERTH AREAS OF BERTHS 25/26 AND 30.



BERTH LIMITS



CONSOLIDATED DREDGING--DREDGED MATERIAL
 REUSE/DISPOSAL APPLICATION

FIGURE 9 - PLAN VIEW

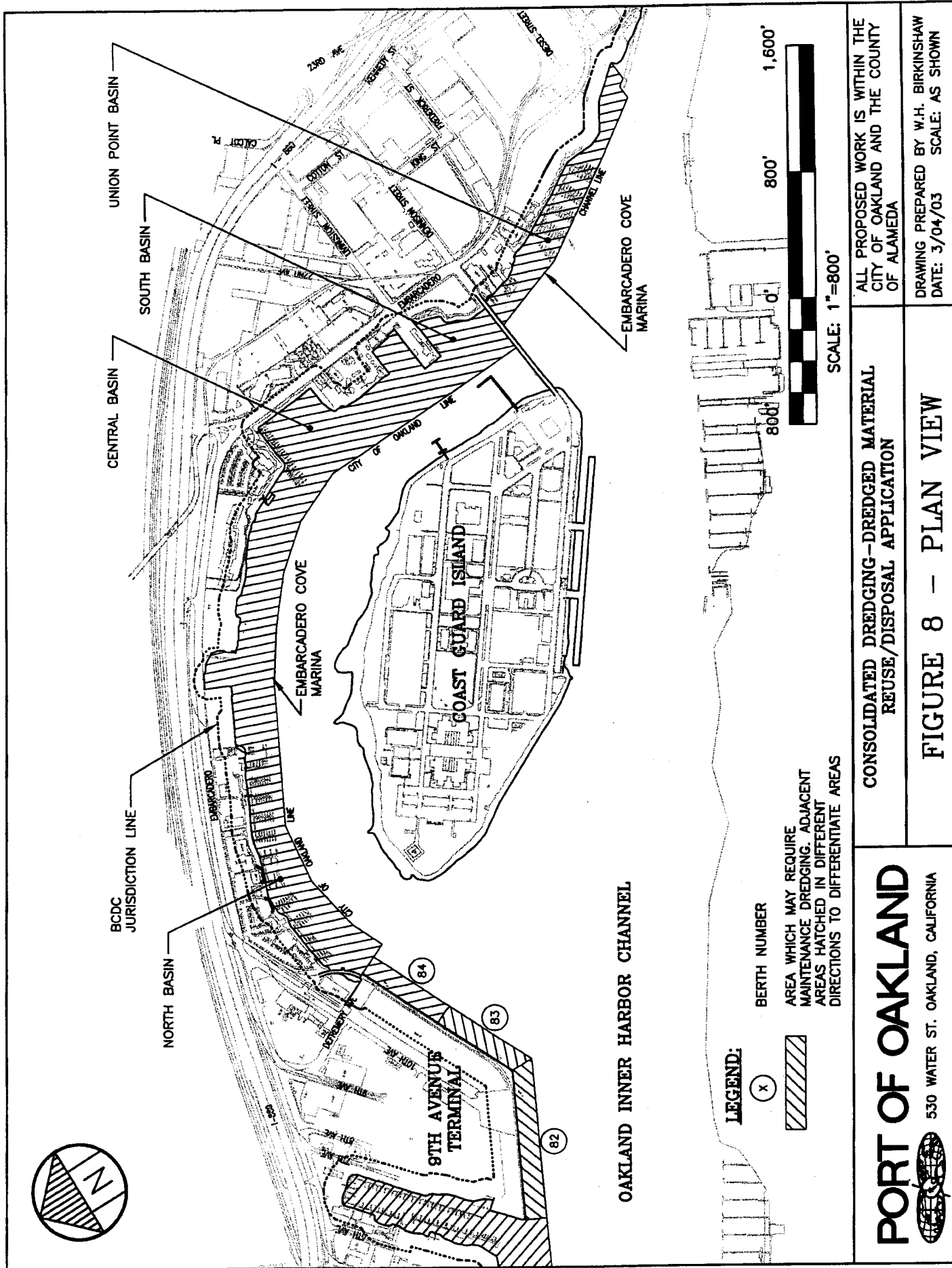
ALL PROPOSED WORK IS WITHIN THE
 CITY OF OAKLAND AND THE COUNTY
 OF ALAMEDA

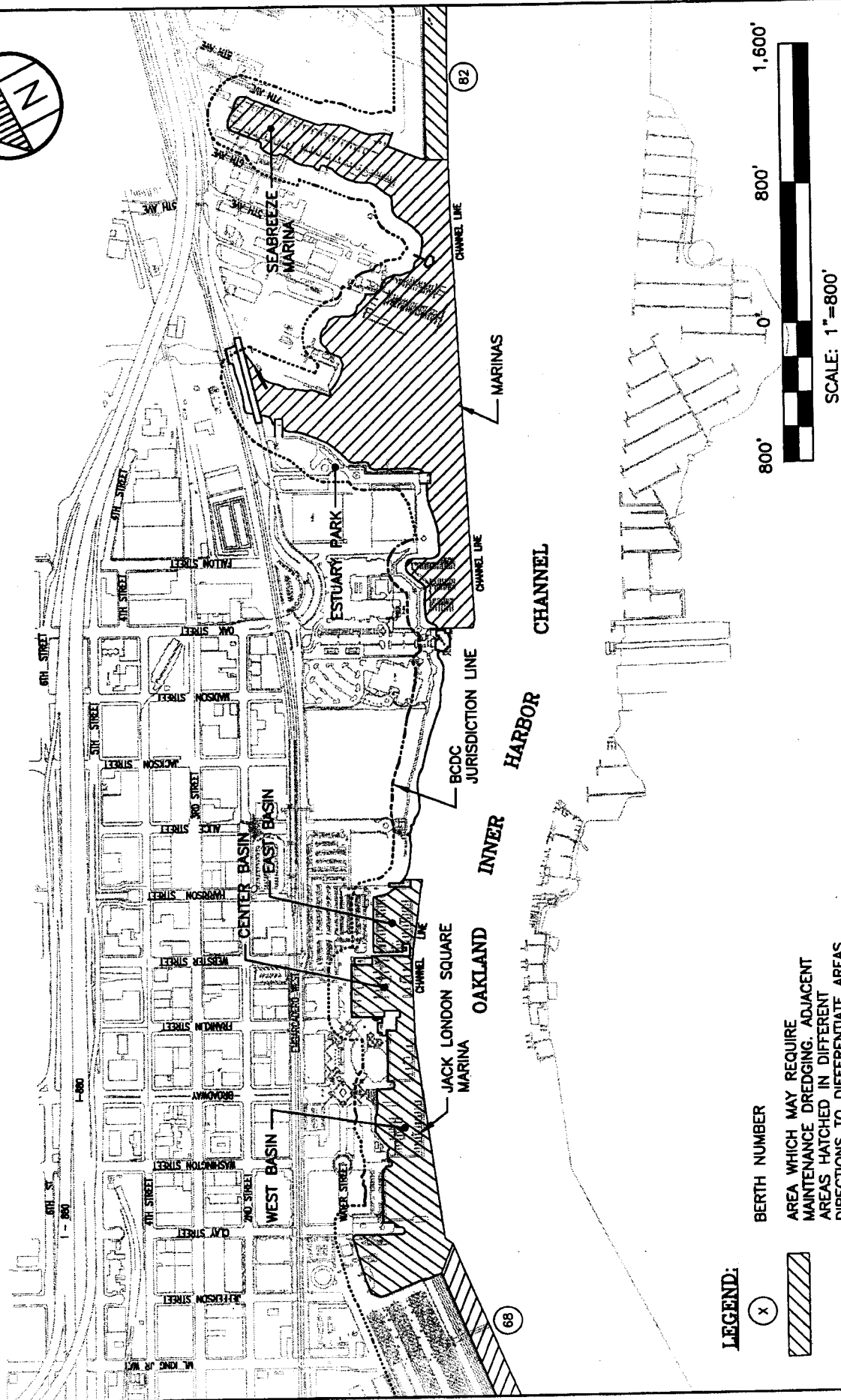
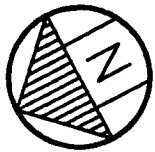
DRAWING PREPARED BY W.H. BIRKINSHAW
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PORT OF OAKLAND

530 WATER ST. OAKLAND, CALIFORNIA







LEGEND:

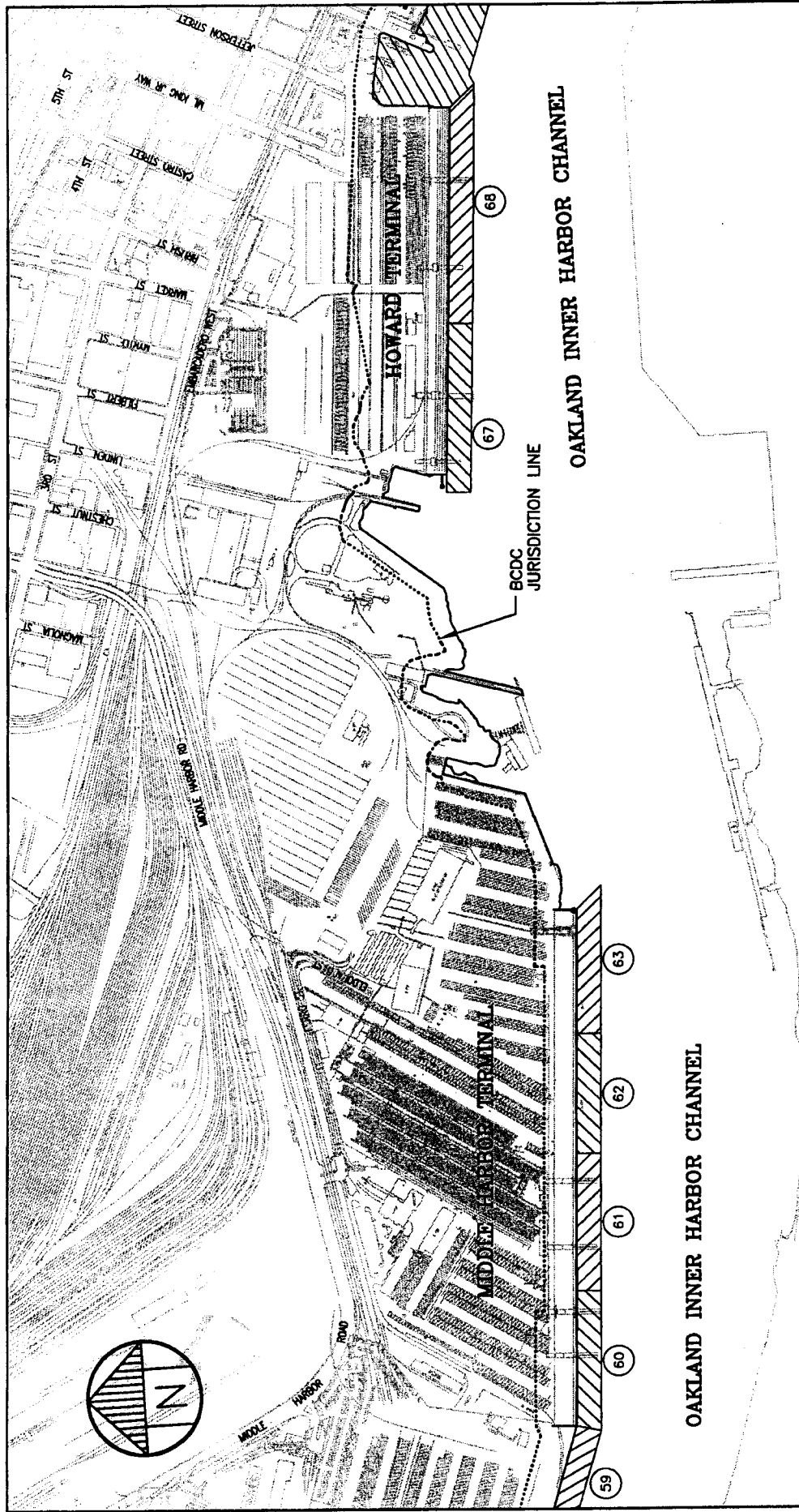


BERTH NUMBER



AREA WHICH MAY REQUIRE
MAINTENANCE DREDGING. ADJACENT
AREAS HATCHED IN DIFFERENT
DIRECTIONS TO DIFFERENTIATE AREAS

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LEGEND:

BERTH NUMBER



AREA WHICH MAY REQUIRE
MAINTENANCE DREDGING. ADJACENT
AREAS HATCHED IN DIFFERENT
DIRECTIONS TO DIFFERENTIATE AREAS



800' 0' 800' 1,600'



SCALE: 1"=800'

CONSOLIDATED DREDGING-DREDGED MATERIAL
REUSE/DISPOSAL APPLICATION

ALL PROPOSED WORK IS WITHIN THE
CITY OF OAKLAND AND THE COUNTY
OF ALAMEDA

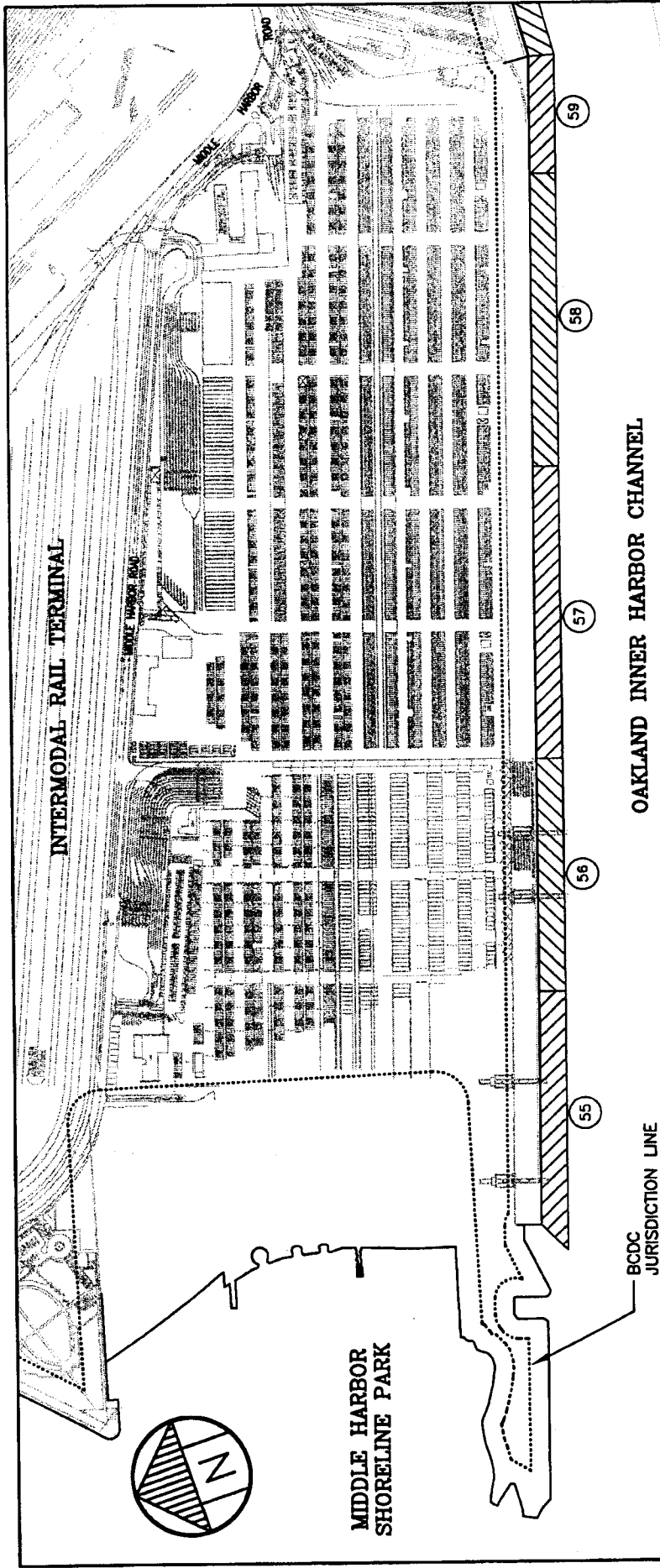
FIGURE 6 - PLAN VIEW

PORT OF OAKLAND

530 WATER ST. OAKLAND, CALIFORNIA



DRAWING PREPARED BY W.H. BIRKINSHAW
DATE: 3/04/03 SCALE: AS SHOWN



LEGEND:



BERTH NUMBER



AREA WHICH MAY REQUIRE
MAINTENANCE DREDGING. ADJACENT
AREAS HATCHED IN DIFFERENT
DIRECTIONS TO DIFFERENTIATE AREAS

800' 0' 800' 1,600'



SCALE: 1"=800'

CONSOLIDATED DREDGING--DREDGED MATERIAL
REUSE/DISPOSAL APPLICATION

FIGURE 5 - PLAN VIEW

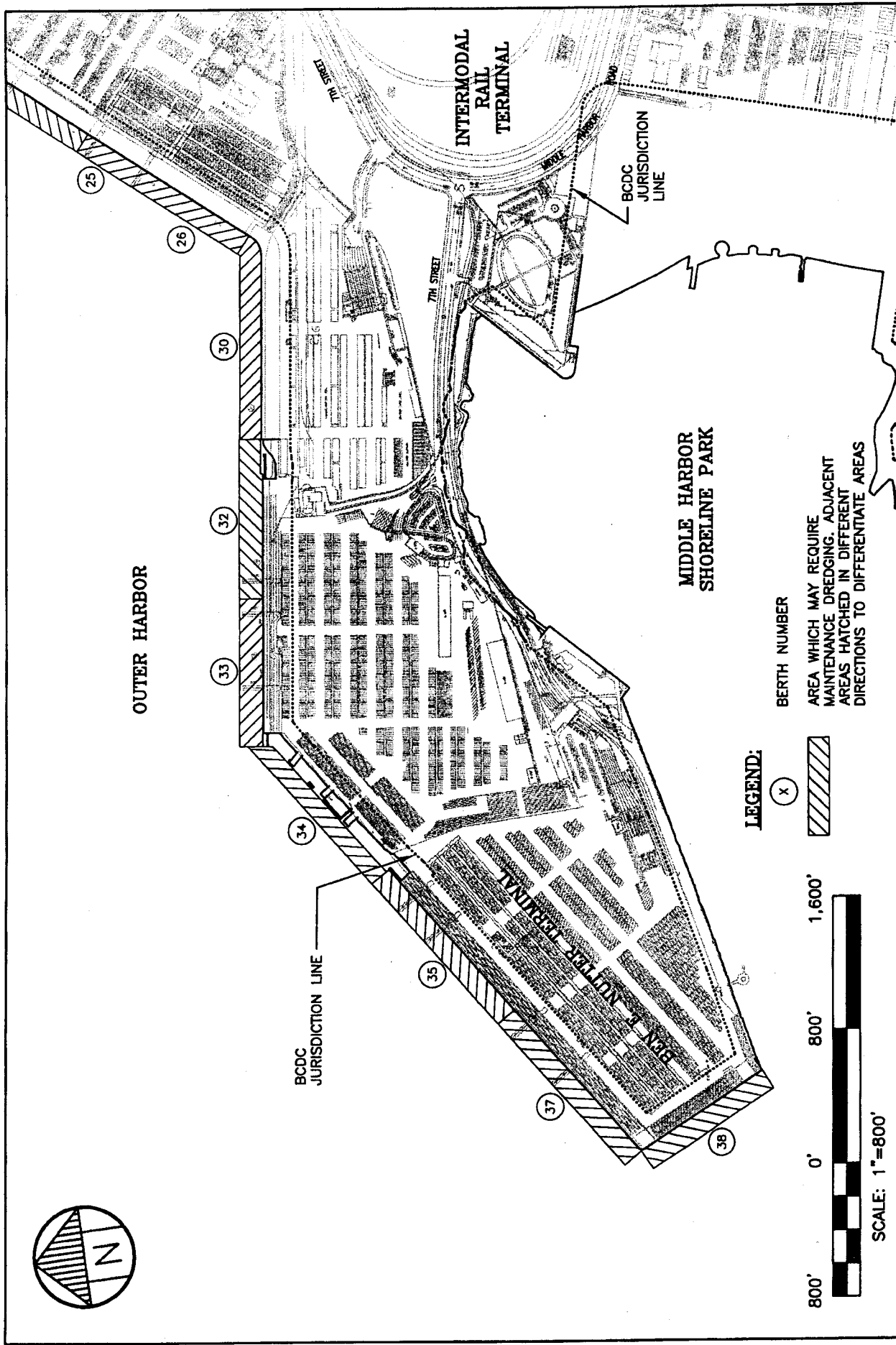
PORT OF OAKLAND

530 WATER ST. OAKLAND, CALIFORNIA

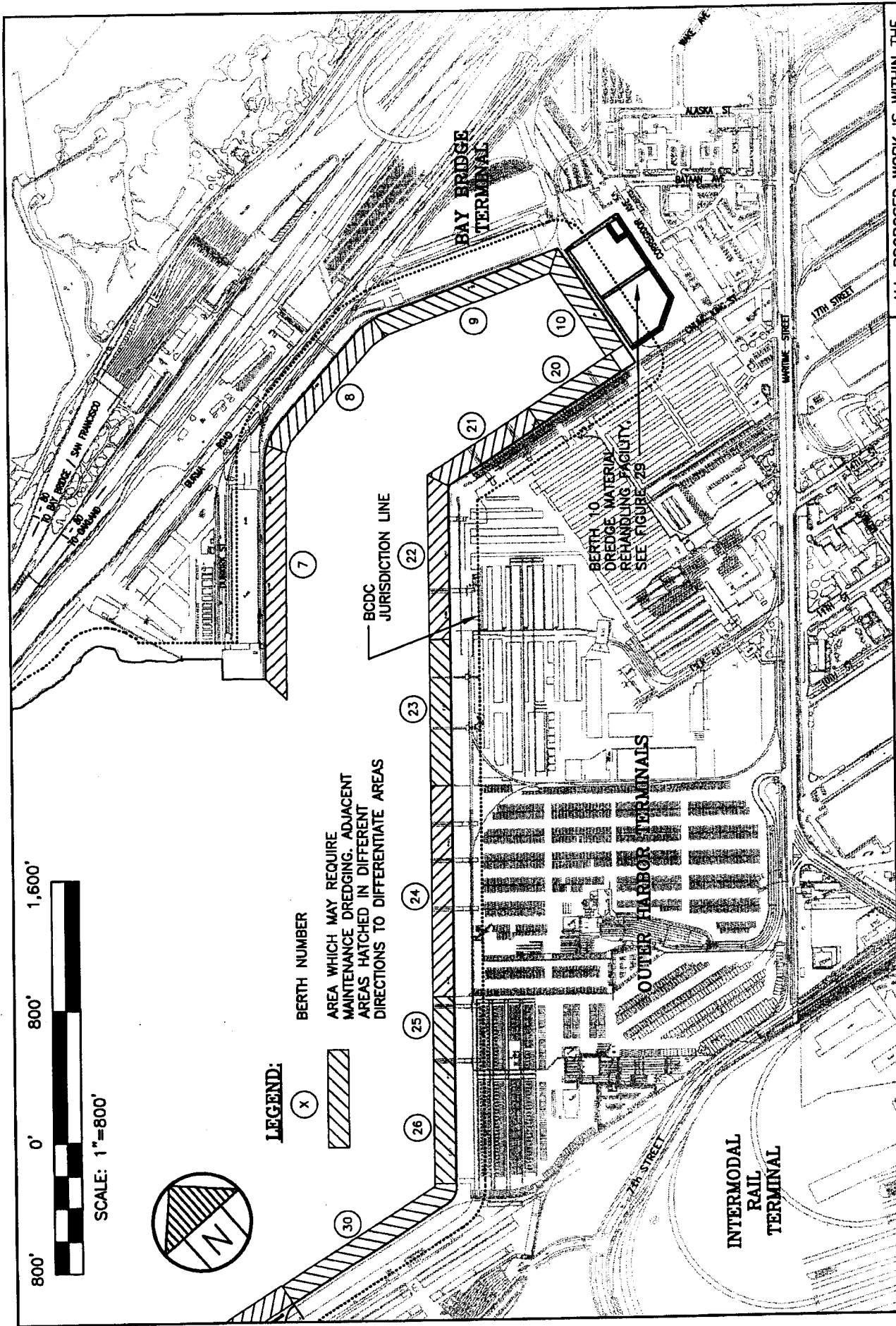


ALL PROPOSED WORK IS WITHIN THE
CITY OF OAKLAND AND THE COUNTY
OF ALAMEDA

DRAWING PREPARED BY W.H. BIRKINSHAW
DATE: 3/04/03 SCALE: AS SHOWN



<p>ALL PROPOSED WORK IS WITHIN THE CITY OF OAKLAND AND THE COUNTY OF ALAMEDA</p>	<p>CONSOLIDATED DREDGING-DREDGED MATERIAL REUSE/DISPOSAL APPLICATION</p>	<p>PORT OF OAKLAND 530 WATER ST. OAKLAND, CALIFORNIA</p>
<p>DRAWING PREPARED BY W.H. BIRKINSHAW DATE: 3/04/03 SCALE: AS SHOWN</p>	<p>FIGURE 4 - PLAN VIEW</p>	



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DATE: 3/04/03 SCALE: AS SHOWN

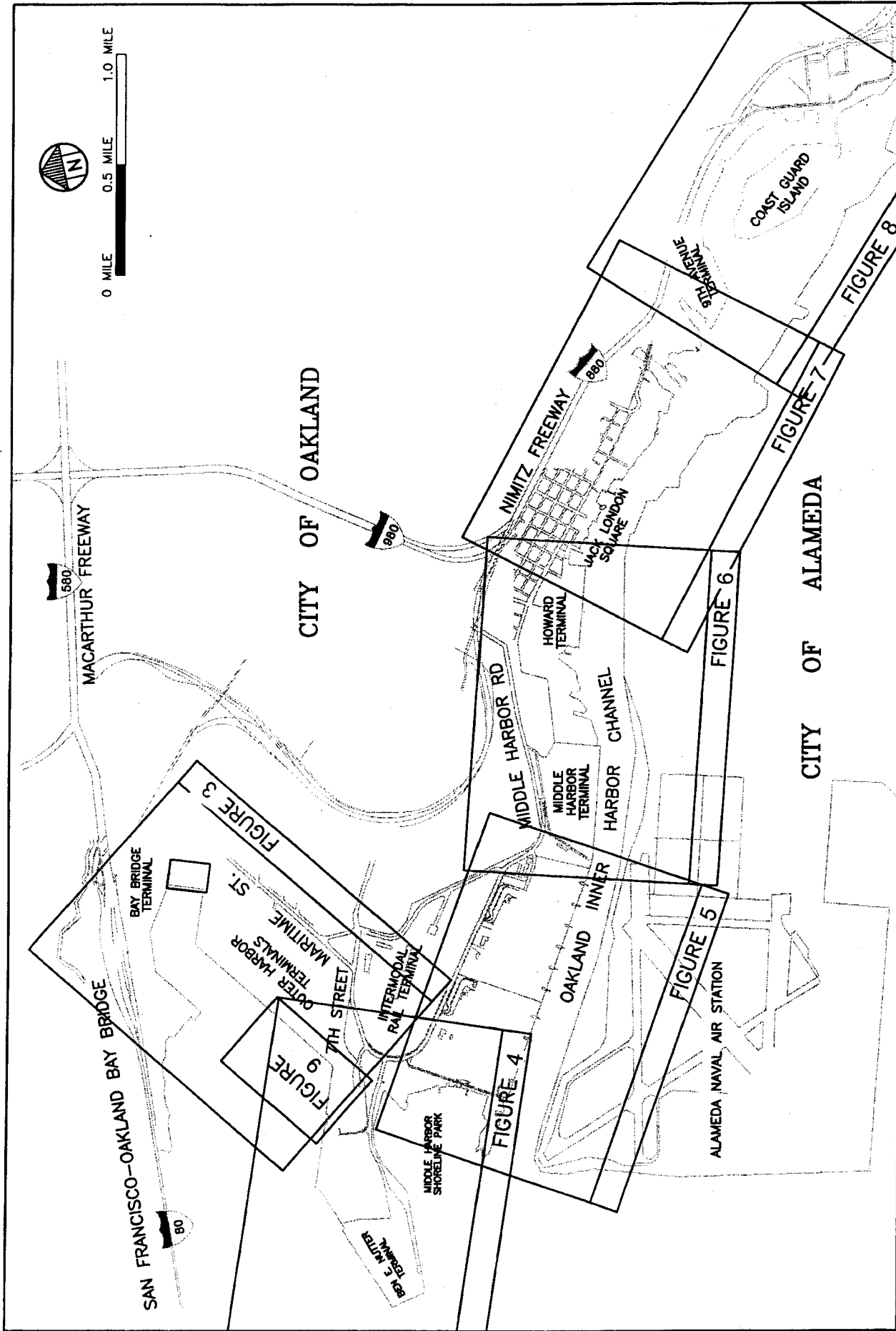
CONSOLIDATED DREDGING-DREDGED MATERIAL REUSE/DISPOSAL APPLICATION

FIGURE 3 - PLAN VIEW

PORT OF OAKLAND

530 WATER ST. OAKLAND, CALIFORNIA





ALL PROPOSED WORK IS WITHIN THE CITY OF OAKLAND AND THE COUNTY OF ALAMEDA

CONSOLIDATED DREDGING-DREDGED MATERIAL REUSE/DISPOSAL APPLICATION

PORT OF OAKLAND

530 WATER ST. OAKLAND, CALIFORNIA



FIGURE 2 - VICINITY MAP

DRAWING PREPARED BY W.H. BIRKINSHAW
DATE: 1/21/03 SCALE: AS SHOWN

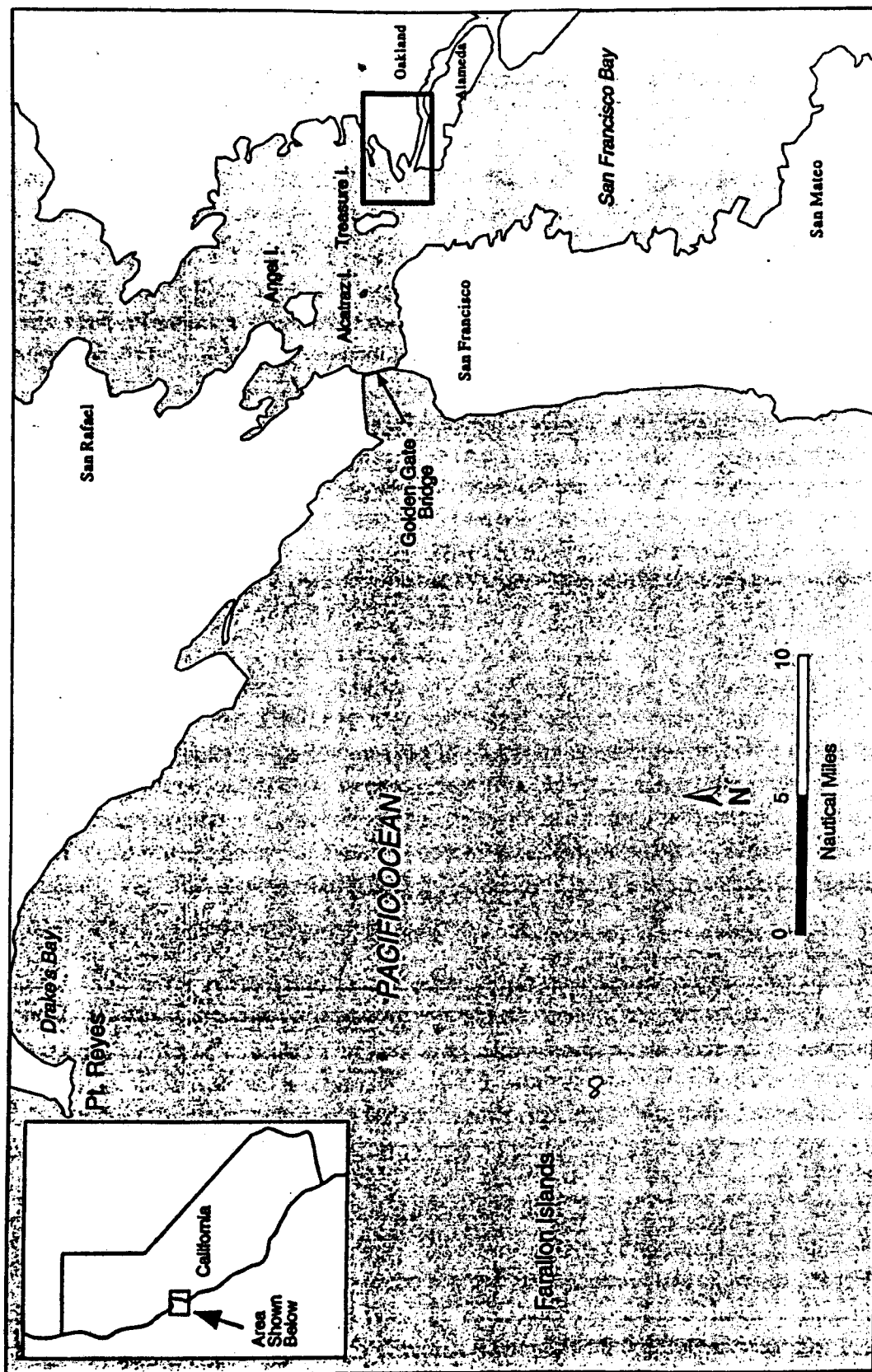


Figure 1 – Regional Map